

REMARKS

Claims 38-45 and 49-52 are pending in the application. In the non-final Office Action of April 22, 2005, the Examiner made the following disposition:

- A.) Rejected claims 49 and 50 under 35 U.S.C. §112, second paragraph.
- B.) Rejected claims 38 and 45 under 35 U.S.C. §102(b) as being anticipated by *Isaka et al.*
- C.) Rejected claims 40, 41, 44, and 45 under 35 U.S.C. §102(e) as being anticipated by *Xu et al.*
- D.) Allowed claims 39, 51, and 52.
- E.) Objected to claims 42 and 43.

Applicants address the Examiner's disposition below.

- A.) Rejection of claims 49 and 50 under 35 U.S.C. §112, second paragraph:

Claim 49 has been amended as per the Examiner's request to overcome the rejection.

Claim 50 depends directly or indirectly from claim 49 and is therefore allowable for at least the same reasons that claim 49 is allowable.

Applicants respectfully submit the rejection has been overcome and request that it be withdrawn.

- B.) Rejection of claims 38 and 45 under 35 U.S.C. §102(b) as being anticipated by *Isaka et al.*:

Applicants respectfully traverse the rejection.

Applicants' independent claim 38 claims a display device having an optical path length L of a cavity portion that has a positive minimum value in a range that satisfies the equation $(2L)/\lambda + \Phi/(2\pi) = m$ (m is an integer), where Φ radians is the sum of phase change amounts to reflection of the light emitted from the light emitting layer at both interfaces bounding a gap and λ is the peak wavelength of the spectrum extracted through a second electrode. As described in Applicants' specification, since the claimed optical path length of the cavity portion has the claimed positive minimum value, there is a reduced dependency on the viewing angle.

This is clearly unlike *Isaka*, which fails to disclose or even suggest Applicants' claimed optical path length. The Examiner argues that the passage from *Isaka* col. 5, line 44

teaches Applicants' claimed equation having the claimed positive minimum value, however, Applicants disagree. As discussed above, Applicants' claimed display device has an optical path length L of a cavity portion that has a positive minimum value in a range that satisfies the equation $(2L)/\lambda + \Phi/(2\pi) = m$ (m is an integer), where Φ radians is the sum of phase change amounts to reflection of the light emitted from the light emitting layer at both interfaces bounding a gap. Nowhere in *Isaka* is there a teaching that *Isaka's* cavity portion has Applicants' claimed positive minimum value. Instead, the cited passage from *Isake* merely discloses an equation, which is not the same as Applicants' claimed equation.

Specifically, *Isaka* fails to disclose or suggest an equation having a sum of phase change amounts that varies based on the material used for the reflective layer. *Isaka's* equation transforms to $(2L)/\lambda - 1/(2\pi) = m$. Thus, unlike Applicants' claimed equation, *Isaka's* equation fails to teach Applicants' claimed variable sum of phase change amounts (Φ). In fact, nowhere does *Isaka* even suggest varying its sum of phase change amounts. Thus, for at least this reason, *Isaka* fails to disclose or suggest claim 38.

Claim 45 is canceled.

Applicants respectfully submit the rejection has been overcome and request that it be withdrawn.

C.) Rejection of claims 40, 41, 44, and 45 under 35 U.S.C. §102(e) as being anticipated by

Xu et al.:

Applicants respectfully traverse the rejection.

Claim 44 has been amended to correct an informality.

Independent claim 40 claims an optical path length L' of said cavity portion satisfies the equation $(2L')/\lambda + \Phi/(2\pi) = m_1 + q$ (m is an integer), where Φ radians is the sum of phase change amounts to reflection of the light emitted from the light emitting layer at both interfaces bounding the gap and λ is the peak wavelength of the spectrum of green light extracted through said second electrode, and an optical path length L of said cavity portion has a positive minimum value in a range that satisfies the equation and m_1 is the integer m that satisfies the equation and q is the integer not smaller than 10: $(2L)/\lambda + \Phi/(2\pi) = m$ (m is an integer).

This is clearly unlike *Xu*, which fails to disclose or even suggest Applicants' claimed optical path lengths. The Examiner argues that *Xu*'s cavity's optical length allegedly is set to integer values of m that are much greater than zero, and that Applicants' q is allegedly much greater than 10. Applicant's respectfully disagree. The attached chart (Exhibit 1) shows a merely illustrative embodiment, in which a chromaticity shift becomes low when $q \geq 10$ and zero when $q \geq 18$. In accordance with the illustrative example, Applicants' claimed invention has a wide viewing angle. *Xu* fails to even discuss this feature, and further fails to disclose or suggest Applicants' claimed optical path lengths. Therefore, for at least this reason, *Xu* fails to disclose or suggest claim 40.

Claim 41, as amended, claims a display device comprising a semi-transparent reflective layer, a first electrode of a light reflecting material, a second electrode of a transparent material, and an organic layer including a light emitting layer interposed between the first electrode and the second electrode. A cavity portion comprises one of a gap between an interface between the first electrode and said organic layer and an interface between the organic layer and said semi-transparent reflective layer, a gap between an interface between the semi-transparent reflective layer and the second electrode and an upper edge interface of the second electrode, and a gap between an interface between the first electrode and said organic layer and said upper edge interface of the second electrode. A color filter is provided for transmitting light resonating in the cavity portion and extracted through the second electrode. A reflectance of each wavelength of external light is limited to 30% or less.

This is clearly unlike *Xu*, which fails to disclose or suggest a reflectance of each wavelength of external light being limited to 30% or less. The Examiner alleges that *Xu*'s back mirror reflects 74% of light which is pre-limited to a specified range by a color filter, and that *Xu*'s device therefore reflects less than 30% of external light. However, in *Xu*'s device the reflectance of external light cannot be limited to 30% or less *at each wavelength*. For example, in *Xu*, a specified range of wavelengths that is transmitted through *Xu*'s color filter is 74% reflected by the back mirror. On the other hand, in Applicants' claimed device and as illustratively shown in Applicants' Figure 22, reflected external light is 30% or less *at each wavelength*. Thus, *Xu* fails to disclose or even suggest claim 41.

Claims 44 depends directly or indirectly from claim 41 and is therefore allowable for at least the same reasons that claim 41 is allowable.

Claim 45 is canceled.

Applicants respectfully submit the rejection has been overcome and request that it be withdrawn.

D.) Allowance of claims 39, 51, and 52:

Applicants respectfully acknowledge the Examiner's finding of allowable subject matter in claims 39, 51, and 52.

E.) Objection to claims 42 and 43:

Applicants respectfully acknowledge the Examiner's finding of allowable subject matter in claims 42 and 43.

Claim 41 is allowable as discussed above. Claims 42 and 43 depend directly or indirectly from claim 41 and are therefore allowable for at least the same reasons that claim 41 is allowable.


Applicants respectfully submit the objection has been overcome and request that it be withdrawn.

Conclusion

Claim 53 is newly added. In view of the above amendments and remarks, Applicants submit that all of claims 38-44 and 49-53 are clearly allowable over the cited prior art, and respectfully request early and favorable notification to that effect.

Respectfully submitted,

Dated: _____

By: 
Christopher P. Rauch
Registration No. 45,034
Sonnenschein Nath & Rosenthal LLP
P.O. Box 061080
Wacker Drive Station, Sears Tower
Chicago, Illinois 60606-1080
(312) 876-8000